

value of his work was recognised by his election into the Royal Society in 1903.

We must not conclude this short article without bearing witness to the great success of Prof. Bridge as a teacher. He excelled, to no common degree, in grounding his pupils in the elements of zoology. As examination candidates his students showed unusual accuracy, and, in the main, a wide knowledge. Those of them who were able to go further and undertake some piece of research found in him not only a stimulus, but an unwearied guide and a sagacious critic.

NOTES.

M. G. DARBOUX has been re-elected president of the Société des Amis des Sciences, MM. Aucoc and Picard vice-presidents, and Prof. Joubin general secretary. The society was founded in 1857 by Baron Thenard with the view of assisting unfortunate inventors, men of science, and professors and their families. Among the names of past-presidents of the society occur those of Thenard, J. B. Dumas, Pasteur, and others. Since its foundation the society has distributed in pensions and grants more than two and a half million francs. This year eighty pensions have been granted to old savants or their widows. The society has assisted the education of some seventy children, and made grants to thirty-five widows. The work of the society should appeal to all who benefit from the work of men of science. Information as to the society may be obtained from the treasurer, M. Fouret, 79 boulevard Saint-Germain, Paris.

WE learn from *Science* that the people of Honolulu have guaranteed already half the money asked for by the Massachusetts Institute of Technology for the maintenance of an observatory which the institute proposes to establish at the brink of Kilauea for the study of volcanic action.

THE Geologists' Association is arranging a long excursion to the Arenigs, from July 28 to August 7, under the direction of Mr. W. G. Fearnside. The excursion secretary is Mr. E. Montag, 4 Queen's Road, Rockferry, Birkenhead.

THE Vienna correspondent of the *Times* announces that during excavations near Willendorf on the Danube by the prehistoric section of the Austrian Natural History Museum, a chalk figurine, 11 centimetres high, representing a female figure, was discovered in a stratum containing instruments and weapons characteristic of the Stone age.

THE maps of the cadastral survey of Egypt have just been used to determine accurately the area of land planted with cotton and its distribution. Each plot in which cotton was sown was marked on the maps (scale 1/2500), so that not only the area and position were recorded, but, since the land-tax has been recently re-assessed with the aid of these maps, the distribution of cotton on land of different degrees of fertility was also determined. The total area was 1,466,530 feddans, or 1,522,258 acres.

THE Naples Academy of Sciences (mathematical and physical section) offers a prize of 1000 lire for the best essay containing a systematic exposition of our present knowledge of the geometrical configurations of the plane and of spaces, considered in relation to the theory of substitutions, with, if possible, some new results. The memoirs are to be sent in anonymously not later than June 30, 1910.

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IN *Travel and Exploration* for July Mr. H. Massac Buist discusses what the nations are doing in the progress of aviation, and refers to the annual prize offered by him to the Aërial League for the best essay by a member of that body dealing with the attention that is being devoted by the leading civilised nations to the advancement of aerial locomotion. The first competition is to close on January 31, 1910. In his article the author shows that while Governments are mainly devoting their attention to the construction of dirigibles, aeroplane machines are, to a large extent, being developed by private enterprise.

WRITING in the *Oxford and Cambridge Review*, with a foreword by Lord Montagu of Beaulieu, Mr. R. P. Hearne advocates the introduction of aviation as a form of sport at the older universities. It is pointed out that such a scheme would produce a school of skilled aviators whose experience would be of great value in future developments of aerial navigation. While the possibility of an Oxford and Cambridge flying race is suggested, we would point out that, in view of the fact that the great majority of Varsity men cannot afford to spend 1000l. on a motor-driven machine, the man of moderate means might participate in the sport by gliding down a suitable incline selected on the Gogmagogs, Madingley Hill, or Royston Heath.

THE number of records of earthquakes obtained at Shide, Göttingen, Hamburg, and Laibach between January 1 and April 30 this year were, respectively, 98, 65, 61, and 33. Each of these earthquakes extended over wide areas, and was recorded at more than one station. At Shide the instrument employed is of the type adopted by the British Association. At the other stations the records were made on smoked paper or by photographic arrangements with a high multiplication.

THE annual general meeting of the Royal Society of Arts, the 155th since the foundation of the society in 1754, was held on Wednesday, June 30, Sir William H. White, K.C.B., chairman of the council, in the chair. The Prince of Wales was re-elected for the ninth time in succession president of the society, and the council, with certain additions and alterations, was re-elected. The principal business of the meeting was the reading of the annual report, which recorded the proceedings of the society during the past year. Reference was made to the failure of the renewed attempt made by the managers of the London Institution to amalgamate with the society. The number of the society's members is now 3490.

THE *Times* announces that in July of next year there will be held in Brussels, in connection with the International Exhibition of 1910, the first International Congress of Administrative Sciences, under the direct patronage of the Belgian Government. The term "administrative sciences" is defined by the congress committee as meaning the sum of theoretical knowledge relating to the services, the organisation, the machinery, and the action of Governments, and to the most practical methods to be employed by them. The honorary secretary to the British committee of the congress is Mr. G. Montagu Harris, Caxton House, Westminster, S.W.

THE recent notices issued by the committee of the International Aëronautical Exhibition at Frankfurt show that many valuable prizes, in addition to those we have already mentioned, have been placed at its disposal, including one by the German Emperor; three prizes are also offered for the best kinematographic films of natural flight. A series of scientific lectures will be delivered, the first being

on July 12, by Major v. Parseval, who will describe his air-ship and its potentialities; many other well-known men of science have also fixed the dates of their lectures. The physics of the upper air will be discussed by Profs. Assmann, Hergesell, Süring, and others. A list of the lectures and prizes already arranged is published in the first number of the exhibition journal *Ila*, this title being a contraction of Internationale Luftschiffahrt Ausstellung.

WE are indebted to the author, Dr. K. J. Bush, for a copy of notes on the molluscan family Pyramidellidae, published in the June number of the *American Journal of Science*. These notes may be regarded as in some degree supplemental to the article on the same group contributed by Mr. P. Bartsch to vol. xxxiv. of the Proceedings of the Boston Society of Natural History.

THE crinoids of the family Comasteridae undergo revision at the hands of Mr. A. H. Clark in No. 1685 of the Proceedings of the U.S. National Museum, no fewer than five new genera, of which three are based on new species, being named and described in the course of the paper. The communication relates, to a great extent, to material collected by the *Albatross*.

POLYCHÆTOUS annelids from Monterey Bay and San Diego, California, are discussed by Dr. J. P. Moore in the June issue of the Proceedings of the Academy of Natural Sciences of Philadelphia, the collections on which the paper is mainly based having been obtained from San Diego in 1902 and 1903, and from Monterey Bay in 1903 and 1904. The total number of species mentioned is sixty-four, of which twenty-one are believed to be new to science. Many other forms doubtless remain to be described, as at both localities collecting was almost entirely restricted to inter-tidal limits, although a few hauls were made with the dredge.

DARWINISM looms large in the June number of *Neue Weltanschauung*, in which the opening article is devoted to a biography of Dr. August Weismann, accompanied by an excellent portrait of that distinguished biologist and evolutionist. There is also a notice of an interesting Darwin exhibition recently opened at Karlsruhe, and arranged by Prof. Walther May. The exhibits are divided into three sections, one historical and biographical, the second theoretical, and the third bibliographical. In the first are included a series of pictures illustrative of the life of Darwin and of the influence of the environment on the organism, while the second is devoted to pictures and specimens illustrative of Darwin's observations and teaching.

THE fresh-water crustaceans of Algeria and Tunis form the subject of the first paper in the June number of the Journal of the Royal Microscopical Society, this communication being based on the collections made by the author, Mr. Robert Gurney, in February and March, 1906. Although the Algerian fresh-water crustaceans have been better worked out than those of any other part of Africa, the author finds that even here our knowledge is far from complete, while still more remains to be done in Tunis, especially in the Tell, or coast-district. A very large number of species were collected, of which several are described by the author as new, the ostracods being omitted and reserved for a future communication. Perhaps one of the most interesting of the forms discovered during the visit is the malacostracan *Cirolana foutis*, described by the author in the *Zool. Anzeiger* for 1908 on the evidence of three examples found under stones at the mouth of a spring near Biskra.

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As the result of a biological survey of the Belgian coast undertaken by the Royal Museum of Natural History of Belgium, Mr. G. Gilson, the director of that establishment, has been enabled to describe a new and interesting parasite which in autumn frequents the nursing-chamber of the females of the schizopod crustacean *Gastrosaccus spinifer*. Seeing that the schizopod occurs in great swarms at some distance from the shore, it is a matter for surprise that the discovery of the infesting parasite should have been so long delayed, especially as the latter is of relatively large size. The parasite is itself a crustacean, referable to the group of epicarids, a section of isopods which have become degraded in accordance with the requirements of a parasitic existence. Although nearly related to *Dajus*, Mr. Gilson is of opinion that the new species should represent a genus by itself, and accordingly proposes the name *Prodajus ostendensis*. The paper, of which we have received a separate copy, is published in vol. xliii., pp. 19-92, of the *Bulletin scientifique de la France et de la Belgique*.

A copy of the Milroy lectures on disinfection and disinfectants, delivered by Prof. R. Tanner Hewlett, and reprinted from the *Lancet*, has been received. In these three lectures Prof. Hewlett decided not to deal with the details of the various methods of practical disinfection, for these are to be found sufficiently described in every text-book of hygiene; he has rather set himself to discuss the scientific principles embraced in the practice of disinfection. He first refers to the natural processes which reduce or destroy specific micro-organisms, such as dilution (by air, water, &c.), sunlight, desiccation, filtration (as in soil); he then turns to the defensive mechanisms with which nature has endowed the human body; and after making a brief reference to the application of internal disinfectants, he passes to a consideration of the disinfection of the infectious material outside the body. References are made to school disinfection, the requirements of an ideal disinfectant, the nature of the processes of disinfection, and the standardisation of disinfectants on the basis of their germicidal values. During the past few years much controversy has arisen upon the value of various methods of gauging the relative germicidal powers of disinfectants, and although advance has been made, we are still some distance from the goal of a satisfactory scientific method; it is important that this matter should be placed upon a sound basis, for, as Prof. Hewlett points out, the use of a disinfectant engenders a sense of security which, in the case of an inefficient one, is unreal, and may lead to disastrous results. The market is flooded with inefficient disinfectants, and there is at present no legal restraint upon their sale.

WE have been favoured with the report of the director of the Royal Botanic Gardens, Ceylon, covering the reports of the various subordinate officers connected with the gardens. Dr. Willis refers very hopefully to the introduction of American machinery for tilling the ground, owing to the success attending the trial at the experiment station in the north of the island. The growth there of Ceara rubber has been excellent, and in consequence nurseries of *Manihot dicholoina* have been formed. The Government chemist, Mr. M. K. Bamber, gives some particulars of analyses of young and old cacao leaves. In the young leaves potash and phosphoric acid accumulate to the extent of 35 per cent. and 10 per cent. respectively, but very small quantities are present in old leaves, which contain a large amount of silica combined with lime and magnesia.

MR. N. N. WORONICHIN, who has been studying the distribution of the algæ in the Black Sea, communicates a

preliminary account to the botanical section (No. 7) of *Travaux de la Société impériale des Naturalistes de St. Pétersbourg* (vol. xxxvii., part iii.). Three vertical zones of distribution are distinguished. The littoral zone is narrow, as there is no appreciable ebb and flow; *Ralfsia verrucosa*, *Corallina virgata*, *Rivularia polyotis*, are the chief forms in certain bays, and in others species of *Ulva* and *Enteromorpha* are the most general. The second zone comprises depths from two to eight fathoms, where *Cystoseira barbata* is everywhere the dominant species. A third zone ranges from ten to thirty fathoms; *Polysiphonia elongata* is the chief formation down to twenty-five fathoms, then *Zanardinia collaris* is dominant, and lower *Antithamnion plumula*.

A SERIES of short papers by Dr. J. N. Rose relating to xerophytic plants of the unrelated but morphologically similar families of the Crassulaceæ and Cactaceæ is collected in vol. xii., part ix., of Contributions from the United States National Herbarium. A Mexican plant, formerly described from barren specimens as an *Echeveria*, is made the type of a new genus, *Thompsonella*. Another plant from Vera Cruz restores the species *Echeveria carnicolor*. Three new species of the same genus are recorded from Guatemala. The re-discovery of the Cuban species of tree cactus, *Cereus nudiflorus*, is interesting; other new species are an arboreal *Pereskia*, a remarkably spiny *Echinocereus*, and a *Nopalea*. Dr. Rose also describes a leguminous tree resembling a *Cercidium*, but sufficiently distinct to be placed in a new genus, *Conzattia*. The photographs illustrating the habit of these plants are admirable.

THE scenery of the Greater Antilles forms the subject of an interesting paper read by Sir H. H. Johnston at the Royal Geographical Society, and published in the June number of the *Geographical Journal*. The subject provides ample scope for the author's well-known powers of observation and description. Reference is made to the striking character of the royal palms, *Oreodoxa regia*, in Cuba, an avenue of which "looks like a column of white marble pillars crowned with a gerbe of glossy green fronds." The palmetto, *Sabal palmetto*, and two other palms with fan-shaped leaves, *Thrinax* and *Coccothrinax*, are prominent in the landscape of the plains and foothills. Tall cacti contribute largely to the scenery of eastern Cuba, especially on sandy flats. In the island of Haiti the agaves aroused the author's admiration. With regard to Jamaica, the author presents a sketch of the vegetation in January; he also offers a word of advice in the matter of retaining such natural beauty spots as Fern Gully.

WE have received revised editions of two useful little manuals:—(1) "Observing and Forecasting the Weather," by Mr. D. W. Horner; and (2) "Some Facts about the Weather," by Mr. W. Marriott. The first is intended for those who may wish to obtain some knowledge of the weather without the use of instruments. For such persons the work contains much useful information; the chapters on clouds and optical phenomena, from which successful forecasts may often be drawn, are especially interesting, as are also the sections on old weather proverbs and the popular fallacy of the moon's influence. The work is accompanied by some good typical illustrations. The second pamphlet gives "some of the results which have been obtained from present-day systematic meteorological observations in the British Isles," and is of special interest to those possessing instruments for an ordinary climatological station. It contains useful information referring to each of the meteorological elements, the use of synoptic

charts, and particulars of average and extreme values; it also deals with special subjects, e.g. electrical phenomena and the investigation of the upper air, and contains many useful illustrations. The work will be acceptable to many who may wish to obtain accurate general weather knowledge without reference to more pretentious instructions and text-books.

THE *Electrical Review* for June 18 contains a list of the electric tramways, railways, and power companies of the United Kingdom. We note that the following towns head the list of those having electric tramways:—Manchester 105, Glasgow 95, London 86, Liverpool 59, Bradford 55, and Leeds 54 miles of track. The leading electric railways are:—the Liverpool and Southport with 35, the Newcastle and Tyneside with 30, the Metropolitan with 26, and the Metropolitan District with 24 miles of double track. The greatest power companies are:—the Newcastle-on-Tyne with a station capacity of 47,000 kilowatts, and the Durham Collieries with 11,000 kilowatts. One of the points which a study of the list brings out is the great popularity of electric traction in the northern towns as compared with the indifference in the south.

By means of quotations from the "Atomistic" of 1862 and the "Weltleben" of 1881 of Robert Grassmann, Dr. F. Kuntze shows in the *Physikalische Zeitschrift* for June 15 that more than forty years ago the brothers Hermann and Robert Grassmann had worked out the details of an electronic theory to which the electronic theories of the present day bear some resemblance. According to the Grassmann theory, the smallest æther particle consists of a pair of entities to which symbols +E and -E are assigned. The pairs repel each other according to the inverse fourth-power law. When glass is rubbed with silk the +E is attracted to the glass, the -E to the silk, and the two bodies become electrified. Light is due to the oscillations of the pairs as pairs, electricity to the oscillation of the constituents of each pair. Heat is the oscillation of matter and the æther pair together. Matter in the same way consists of pairs of elements, and chemical combination of two substances is the attraction of the positive matter element by the negative part of the æther pair, and the negative matter element by the positive part of the æther pair. The positive and negative parts of a pair are supposed to keep apart owing to the motion of each round the other, as in a binary star.

AN interesting article on the mechanical testing of cast iron appears in the *Bulletin de la Société d'Encouragement pour l'Industrie nationale* for May. The author, M. Ch. Frémont, deals first with the historical aspect of his subject, giving drawings of early apparatus, and then proceeds to describe special machines of his own with which he has made many tests on small specimens for the determination of the coefficient of elasticity, the elastic limit, and the breaking strength. The results and plotted diagrams are given, and from these the author arrives at the following conclusions:—the testing under static bending of cast-iron samples of greatly differing strengths shows that the coefficient of elasticity varies considerably, from simple to triple proportion; the capacity for elastic bending of cast iron is inversely proportional to its strength; the elastic limit under static bending varies very greatly, being from 0.45 to 0.80 of the breaking strength.

MOST of the engineering and shipbuilding periodicals for the week ending June 26 contain reference to the new rules which are on the point of being issued by Lloyd's Register of British and Foreign Shipping. The revised rules are framed to include vessels up to about 680 feet in length,

and they cover all the vessels previously classed by the society excepting the large Cunard steamers *Lusitania* and *Mauretania*. The most important modification in the new rules is in the basis for determining the "transverse number" and the "longitudinal number." The former number is now to be found by adding the breadth and depth only, and the latter by multiplying the length by the sum of the breadth and depth. It is also of importance to notice that all the sections in the tables conform to the standards of the Engineering Standards Committee. This is a very wise move, and is much to be commended. Another step in the right direction has been taken in the adoption of a unit for scantlings of one-fiftieth of an inch instead of one-twentieth as in the old rules. This not only conforms with the decimal system, but, as 0.02 inch is practically half a millimetre, a close connection with the metrical system is secured. As Lloyd's Register covers between 70 per cent. and 80 per cent. of the world's shipping for insurance purposes, the new rules cannot fail to influence the shipbuilding and steel industries in this and most foreign countries.

A NOTE in the *Bulletin de l'Institut Pasteur* for May 30 (vii., No. 10, p. 453) announces the discovery by Carlos Chagas, of Rio de Janeiro, of a new human trypanosome parasite (*T. cruzi*), conveyed by a bug (*Conorhinus*), and causing an often fatal illness among miners and others in the State of Minas.

THE Bulletin of the Johns Hopkins Hospital for June (xx., No. 219) contains an interesting historical essay, by Dr. Gerster, on the life and times of Gerhardt van Swieten, physician to the Empress Maria Theresa, who was born in Leyden in 1700 and died in 1772 at Schönbunn.

A COMPREHENSIVE note on the cartography of the Philippine Islands is given by Prof. Guido Cora in *Bollettino della Soc. Geogr. Ital.* as a notice of the recent map of the islands compiled from original sources by Mr. C. W. Hodgson.

WE have received from the Nottingham Free Public Library a copy of a simply arranged supplementary science catalogue of the central lending library dealing with books in most branches of science published between 1901 and the present year.

MR. R. B. HENDERSON, assistant master at Rugby School, has written an introduction to the study of moths and butterflies for the Rugby School Natural History Society, entitled "The Scaly-winged." It will be published immediately by Messrs. Christophers.

WE have received vol. vi. of "Contributions from the Jefferson Physical Laboratory." It consists of a reprint of twelve papers which have appeared in the Proceedings of the American Academy of Science or in other periodicals during the past twelve months. Five of these papers have already been noticed in these columns.

IN the announcement in NATURE of May 27 (p. 375) of the resignation by Mr. H. H. Clayton of his position at the Blue Hill Meteorological Observatory, it was stated that he had been in charge of the observatory since 1894. This statement does not express the position exactly. Mr. Clayton has served for many years as observer or meteorologist, and his researches have added to the reputation of the observatory, but the director is Prof. Lawrence Rotch, who founded the observatory in 1885, and provides for its material support.

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THE June number of the *Stonyhurst Magazine* contains an illustrated description of the Milne seismograph used in the National Antarctic Expedition in H.M.S. *Discovery* under Captain R. F. Scott, R.N., in 1904. The seismograph is now a permanent loan to the observatory at Stonyhurst from the Antarctic committee of the Royal Geographical Society. The instrument stands at Stonyhurst on a solid stone pillar fixed in 12 inches of concrete; its position is lat. $53^{\circ} 50' 40''$ N. and long. 9m. 52.68s. W. of Greenwich. A new recording apparatus has been secured, and there is every reason to hope that useful observations will be made at the new station.

OUR ASTRONOMICAL COLUMN.

COMET 1909a, BORRELLY-DANIEL.—Further observations of comet 1909a have revealed no striking features either in its form or in its behaviour. In No. 4334 of the *Astronomische Nachrichten* M. Chofardet records the observations made at the Besançon Observatory, and states that on June 17 and 19 the comet was of magnitude 11.0 or 12.0, had a round, diffused head of 1.5' diameter, and a vague condensation which could be seen occasionally by oblique vision.

A NEW FORM OF COMPARISON PRISM.—In all spectroscopic work where a comparison prism placed over the slit is used, the dark band between the compared spectra, produced by the edge of the prism, constitutes an inconvenience which may prove a source of error. To remedy this defect, Prof. Louis Bell has employed a specially designed compound prism, in which the light from one of the sources is reflected from the fine edge of a thin layer of silver, whilst that from the other source is allowed just to miss the edge. Thus the line of demarcation is practically eliminated. The method of preparing such compound prisms is described, and illustrated by diagrams, in No. 4, vol. xxix., of the *Astrophysical Journal* (p. 305).

HALLEY'S COMET.—No. 4330 of the *Astronomische Nachrichten* contains two search-ephemerides for Halley's comet. The first is by Dr. Holetschek, who discusses the probable date of perihelion and gives three ephemerides, one for May 16.45, 1910, and the others for thirty days before and after respectively. At the previous apparition, in 1835, the comet was discovered 102 days before the perihelion passage, when its distances from the sun and earth were 1.9 and 2.4 astronomical units respectively; the corresponding distance from the sun will occur, according to Dr. Holetschek's data ($T = \text{May } 16.45, 1910$), on February 3, 1910. The second ephemeris has been computed by Herr L. Matkiewitsch from the data given in the essay which won the *Astronomische Gesellschaft* prize; the positions now given vary considerably, at different epochs, from those previously referred to in these columns (NATURE, No. 2046, January 14, p. 320).

THE POLARISATION OF THE SOLAR CORONA.—In the June number of the *Bulletin de la Société astronomique de France* M. Salet discusses at length the photographs obtained at the 1905 eclipse with a polariscopic camera. These photographs show the coronal radiations to be strongly polarised right down to the moon's edge, thereby indicating that reflected light is being dealt with; but the spectroscopic observations indicate that radiations directly from a light-source are in question. M. Salet suggests that the apparent contradiction may be explained by the theory that the bright radiations observed spectroscopically are due to metallic vapours rendered fluorescent by the intense solar radiation. In this condition metallic vapours give band spectra, and the superposition of these might, if small dispersion were employed, produce the appearance of a continuous spectrum such as has been observed. In support of his theory M. Salet quotes the observation of Sir Norman Lockyer at the eclipse of 1882, that the coronal spectrum appeared to be formed of superposed bands, and directs attention to the discovery of magnetic fields by Prof. Hale, which, with a rotating sun, afford the conditions necessary for his theory.